

Claims

We Claim:

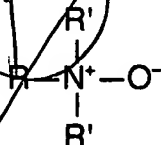
1. A method for treating a subterranean formation comprising:
 providing an aqueous viscoelastic treating fluid having:
 an aqueous base fluid; and
 a non-ionic amine oxide surfactant gelling agent;
 injecting the aqueous viscoelastic surfactant treating fluid through a
 wellbore and into the subterranean formation; and
 treating the subterranean formation under conditions effective to do
 so.

2. The method of claim 1 where the non-ionic amine oxide surfactant gelling agent is the only gelling agent employed.

3. The method of claim 1 where the non-ionic amine oxide surfactant gelling agent is employed in the absence of a polymeric gelling agent.

4. The method of claim 1 where the non-ionic amine oxide surfactant gelling agent is present in the aqueous base fluid in a proportion from about 0.5 to about 25 vol. %.

5. The method of claim 1 where the non-ionic amine oxide surfactant gelling agent has the formula:



(I)

where R is an alkyl or alkylamido group averaging from about 8 to 24 carbon atoms and R' are independently alkyl groups averaging from about 1 to 6 carbon atoms.

6. The method of claim 1 where the non-ionic ^{amido} amine oxide surfactant gelling agent is tallow amido propylamine oxide (TAPAO).
7. The method of claim 1 where the aqueous base fluid is brine.
8. The method of claim 1 where treating the subterranean formation is selected from the group consisting of
fracturing the formation under effective pressure where the aqueous viscoelastic treating fluid further comprises a proppant;
acidizing the formation where the aqueous viscoelastic treating fluid further comprises an acid;
packing the formation with gravel where the aqueous viscoelastic treating fluid further comprises gravel;
stimulating the formation where the aqueous viscoelastic treating fluid further comprises a stimulating agent;
controlling fluid loss where the aqueous viscoelastic treating fluid further comprises a salt or ~~easily removed~~ solid; and mixtures thereof.
9. The method of claim 1 further comprising
breaking the gel of the aqueous viscoelastic treating fluid by a mechanism selected from the group consisting of contact with a hydrocarbon, contact with alkoxylated alcohol solvents, dilution, and contact with at least one reactive agent.

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10. An aqueous viscoelastic treating fluid comprising:
an aqueous base fluid; and
a non-ionic amine oxide surfactant gelling agent.

11. The aqueous viscoelastic treating fluid of claim 10 in the absence of another gelling agent.

12. The aqueous viscoelastic treating fluid of claim 10 in the absence of a polymeric gelling agent.

13. The aqueous viscoelastic treating fluid of claim 10 where the non-ionic amine oxide surfactant gelling agent is present in the aqueous base fluid in a proportion from about 0.5 to about 25 vol. %. ^{amido}

14. The aqueous viscoelastic treating fluid of claim 10 where the aqueous base fluid is brine.

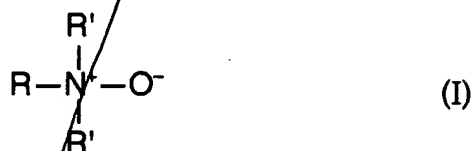
15. The aqueous viscoelastic treating fluid of claim 10 where the non-ionic amine oxide surfactant gelling agent has the formula:



where R is an alkyl or alkylamido group averaging from about 8 to 24 carbon atoms and R' are independently alkyl groups averaging from about 1 to 6 carbon atoms.

16. The aqueous viscoelastic treating fluid of claim 10 where the non-ionic amine oxide surfactant gelling agent is tallow amido propylamine oxide (TAPAO). ^{amido}

17. An aqueous viscoelastic treating fluid comprising:
 an aqueous base fluid; and
 a non-ionic amine oxide surfactant gelling agent having the formula:



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where R is an alkyl or alkylamido group averaging from about 8 to 24 carbon atoms and R' are independently alkyl groups averaging from about 1 to 6 carbon atoms, and
 where the non-ionic amine oxide surfactant gelling agent is present in the aqueous base fluid in a proportion from about 0.5 to about 25 vol. %.